UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2004/00021

April 19, 2004

Mr. Fred Patron
U.S. Department of Transportation
Federal Highway Administration
The Equitable Center, Suite 100
530 Center Street NE
Salem, OR 97301

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery and Conservation Management Act Essential Fish Habitat Consultation for the Ferris Creek Bridge Replacement Project, Columbia River Basin, Clatsop County, Oregon

Dear Mr. Patron:

Enclosed is a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed Ferris Creek Bridge Replacement Project in Clatsop County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of twelve species of ESA-listed salmon and steelhead, or destroy or adversely modify their designated critical habitat. As required by section 7 of the ESA, NOAA Fisheries included reasonable and prudent measures with nondiscretionary terms and conditions that are necessary to minimize the impact of incidental take associated with this action.

This document also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and implementing regulations (50 CFR Part 600). NOAA Fisheries concluded that the proposed action may adversely affect designated EFH for Pacific salmon, groundfish, and coastal pelagic species. As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days after receiving an EFH conservation recommendation.

Please direct any questions regarding this consultation to Tom Loynes of my staff in the Oregon State Habitat Office at 503.231.6892.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Ferris Creek Bridge Replacement Project
Columbia River Basin, Clatsop County, Oregon
Sixth Field HUC - 170800060202

Agency:	Federal Highway Administration
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	April 19, 2004
Issued by:	for Michael R Crouse _____ D. Robert Lohn Regional Administrator
Refer to:	**2004/00021**

TABLE OF CONTENTS

1. INTRODUCTION

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with U.S. Fish and Wildlife Service and NOAA's National Marine Fisheries Service (NOAA Fisheries), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. This biological opinion (Opinion) is the product of an interagency consultation pursuant to section 7(a)(2) of the ESA and implementing regulations found at 50 CFR 402.

The analysis also fulfills the essential fish habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2)).

1.1 Background and Consultation History

On January 15, 2004, NOAA Fisheries received a letter from the Federal Highway Administration (FHWA) requesting formal consultation pursuant to section 7(a)(2) of the ESA, and EFH consultation pursuant to section 305(b)(2) of the MSA for the Ferris Creek Bridge Replacement Project, Clatsop County, Oregon. A biological assessment (BA) describing the proposed action and its potential effects was submitted with the letter. NOAA Fisheries considered the information sufficient to initiate formal consultation. In the BA, the FHWA determined the proposed action was likely to adversely affect the following ESA-listed salmon and steelhead: Snake River (SR) steelhead (*Oncorhynchus mykiss*), Upper Columbia River (UCR) steelhead, Middle Columbia River MCR) steelhead, Upper Willamette River (UWR) steelhead, Lower Columbia River (LCR) steelhead, SR spring/summer-run chinook salmon (*O. tshawytscha*), SR fall-run chinook salmon, UCR spring-run chinook salmon, UWR chinook salmon, LCR chinook salmon, Columbia River (CR) chum salmon (*O. keta*), and SR sockeye salmon (*O. nerka*). The FHWA also found the proposed project may adversely affect designated EFH.

1.2 Proposed Action

The proposed action is the funding of a bridge replacement by the FHWA. The Ferris Creek area is just upstream of a complex of sloughs and levees in a historical tidal marshland of the lower Columbia River. Construction activities would include bridge removal and replacement, vegetation removal, placement of fill material, cofferdam installation and removal, and vegetation plantings. Specific elements of the proposed action are described below.

The existing Ferris Creek Bridge on Pearson Road, built in 1964, is a 3-span structure with a total length of 10.1 meters (m) and width of 5.7 m. The bridge is composed of creosote-treated timbers, piles, stringers, deck, rail, and abutments. Sixteen piles support the bridge, with 4 piles supporting each of the two interior bents and the two end abutments. There is no riprap supporting creek banks beneath the bridge or along the wing walls for the abutment sides.

The proposed bridge will be a 12.2-m, single-span structure with 6, 45.7-centimeter (cm) deep, precast prestressed hollow-core slabs supported by a driven pile foundation. The proposed roadway will be 6.7 m wide. The wing walls will flare out approximately 3 m on both sides of the bridge abutments to meet standards ans each concrete end abutment will be founded on 4 steel pipe piles. The new bridge and approaches will be widened slightly, resulting in the creation of approximately 70.6 m^2 of new impervious surface.

The existing roadway and approaches will be widened approximately 0.6 m on each side to account for an additional roadway width at the bridge approaches. The proposed bridge will be raised only 60 cm above existing elevation at the northeast end, and will be about 30 cm below the existing elevation at the southwest end, resulting in a slight change in grade that will allow stormwater to drain toward the southwest end of the bridge and be treated before entering Ferris Creek.

Construction

The proposed project has several construction activities that have the potential to impact water quality and fish habitat, which include the following: (1) Removal and disposal of the existing creosote treated timbers within the bridge pilings, deck, and abutments; (2) staging area location and containment; (3) work area isolation, frequency, and duration of in-water work; (4) riparian vegetation removal; and (5) stormwater containment and treatment.

The treated timbers in and above the water column, and the existing bridge will be removed via a crane stationed in the staging area away from the wetted channel. The bridge will be removed in sections, lifted off support pilings, and temporarily placed in the staging area.

An attempt will be made to completely remove the treated pilings using a vibratory hammer. If unsuccessful, the pilings will be cut off 0.6 m below the streambed and capped with gravel. During removal with the vibratory hammer, a pea gravel cone will be placed around the base of each piling to be removed. As the end of the piling comes out of the ground, the mounded pea gravel will capture some of the released contaminants and collapse into the hole, minimizing the exposure of surface water and channel sediment to residual creosote that may remain on the sidewalls of the hole.

The treated timber piles will be removed from the channel during the in-water work period of July 1 to September 15 for Ferris Creek. Although pile removal is expected to cause a relatively low level of disturbance, work area isolation will be initiated before these activities. Fish passage will be maintained at all times during pile removal and other construction-related

activities. Because of the existence of alternate travel routes, there will be no need to construct a detour as part of this project.

Staging Area

The staging area will be immediately beside, or on Pearson Road between Old Highway 30 and the south side of the existing bridge, and 100 m north of the north side of the bridge. The staging area will be approximately 3.7 m wider than the existing paved roadway occupying approximately 0.21 hectares (H). Construction equipment will be staged on Pearson Road, therefore avoiding disturbance to vegetation.

The proposed staging area will be designed to address the potential need for pollution control and chemical spills. The storage and refueling areas will be at the north and south ends of the staging area providing the maximum buffer between the staging area and Ferris Creek. Conservation measures will be implemented to contain hazardous materials. Specific conservation measures pertaining to staging areas are listed under section 7.2 in the BA. A boom will be constructed
along both sides of the staging area providing containment. These containment booms will be inspected daily, and if needed, secondary containment measures will be installed directly around heavy equipment. Any hazardous materials spilled will be disposed of off-site within 48 hours.

Work Area Isolation

Work area isolation will occur around each abutment and temporarily across portions of Ferris creek for pile removal. Currently, the proposed isolation method includes constructing sandbag coffer dams around both of the abutments and installing a rectangular sandbag enclosure around the middle piles under the Ferris Creek Bridge during pile removal. There will be an open channel allowing fish passage throughout the extent of the project. The in-water work period is from July 1 to September 15.

The proposed construction activities within the Ferris Creek Channel include: (1) Removal of the existing bridge, abutments, and piles; and (2) installation of the wing walls. Construction of the new abutments will occur within the existing limits of fill on Pearson Road. The two new abutments, each with 4 piles, will be constructed in the existing fill for the road alignment, requiring no wetland alterations.

Vegetation Removal

The proposed bridge replacement project will require the clearing of approximately 237 m^2 of roadside vegetation. The removal location will be from the existing edge of pavement to the existing road fill on both sides of the bridge and approaches to the bridge. Approximately 36 m^2 of the proposed clearing area is below the "highest measured tide elevation". The vegetation to be removed with the widening activities primarily includes reed canarygrass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus discolor*). There is the potential that this project will require removal of three trees that are approximately 12 m off the edge of the pavement south and west of the bridge. This tree removal will include one, 1.8-m tall Douglas-fir

(*Pseudotsuga menziesii*) sapling and two cottonwoods (*Populus sp.*) that are approximately 0.3 m in diameter at breast height (DBH).

Vegetation clearing may occur at both bridge abutments resulting from the removal of the existing bridge abutments and piles, excavation of road fill behind the existing abutments, installation of steel piles, and installation of new concrete abutments, and wing walls. The majority of vegetation removal will be reed canarygrass and Himalayan blackberry, which are the dominant vegetation types.

Stormwater Treatment

Stormwater treatment will be improved with the new bridge design. The existing bridge has a timber plank deck and gaps between the planks, which allows stormwater to discharge directly into the creek. The proposed bridge, sloping to the southwest, will collect and convey stormwater off the bridge into a vegetated shoulder for treatment via a steel plate attached to the exterior slabs. Vegetation beside the bridge will filter stormwater, allowing sediments to settle out before the water discharges to the creek or infiltrate into the soils.

1.3 Description of the Action Area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area (project area) involved in the proposed action (50 CFR 402.02). For this consultation, NOAA Fisheries defines the action area as all estuarine and riverine habitats accessible to the subject species in Ferris Creek, a tributary to the Columbia River [river kilometer (Rkm) 38.6 to Rkm 40.2)].

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information and Critical Habitat

This consultation considers the potential effects of the proposed action on SR steelhead, UCR steelhead, MCR steelhead, UWR steelhead, LCR steelhead, SR spring/summer-run chinook salmon, SR fall-run chinook salmon, UCR spring-run chinook salmon, UWR chinook salmon, LCR chinook salmon, CR chum salmon, and SR sockeye salmon. The subject action will occur within designated critical habitat for SR fall-run chinook salmon, SR spring/summer-run chinook salmon, and SR sockeye salmon. Species' listing dates, critical habitat designations, and take prohibitions are listed in Table 1. The objective of this consultation is to determine whether the proposed action is likely to jeopardize the continued existence of the ESA-listed salmon and steelhead, or destroy or adversely modify designated critical habitat for SR fall-run chinook, SR spring/summer-run chinook salmon, or SR sockeye salmon. This consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402.

Based on migratory timing, ESA-listed salmon and steelhead species likely will be present in the action area during the proposed construction period. The action area serves as rearing habitat and as saltwater acclimation habitat juvenile salmon and steelhead. Just upstream on the Columbia River, LCR adult chinook use Blind Slough for migration to spawning grounds in Gnat Creek, upstream of Blind Slough. Steelhead migrate year-round, with peak smolt out-migration occurring May through June, and peak adult migration occurring January through June. Sockeye salmon migrate April through August, with peak smolt out-migration occurring May through June, and peak adult migration occurring June through July. Chinook salmon migrate year-round, with peak smolt out-migration occurring March through July, and peak adult migration occurring March through October. Chum salmon migrate October through May, with peak smolt out-migration occurring March through May, and peak adult migration occurring October through November.

All ESA-listed salmon and steelhead in the Columbia River must pass through lower river and estuary twice: Once as juveniles en route to the Pacific Ocean, and again as adults when they return to spawn. Adult salmon and steelhead returning to the Columbia River migrate throughout the year, with the majority passing by this area from early spring through autumn. Some adult salmon or steelhead may enter the action area during migration, but this is unlikely.

Subyearling chinook and chum salmon commonly are found within a few meters of the shoreline at water depths of less than 1 m. Although they may migrate through areas with deeper water, they generally remain close to the water surface and near the shoreline during rearing, favoring water no more than 2 m deep and areas where currents do not exceed 0.3 m per second. They seek lower energy areas without waves or currents that require them to expend energy to remain in position and where food is more readily available from invertebrates that live on or near the substrate.

NOAA Fisheries designates critical habitat based on physical and biological features that are essential to the ESA-listed salmon and steelhead. The essential features of designated critical habitat within the action area that support successful migration, smoltification, and rearing for ESA-listed salmon and steelhead include: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (primarily juvenile), (8) riparian vegetation, (9) space, and (10) safe passage conditions. The proposed action may affect the following six essential features: Substrate, water quality, water velocity, food, space, and safe passage conditions. Salmon and steelhead without designated critical habitat have the same needs.

2.1.2 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR 402.02 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps of the consultation regulations and when appropriate combines them with its Habitat Approach (NOAA Fisheries 1999): (1) Consider the biological requirements of the ESA-listed salmon and steelhead;

(2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species; and (4) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the effects of the environmental baseline, and any cumulative effects, and considering measures for survival and recovery specific to other life stages. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed salmon and steelhead. If so, step 5 occurs. In step 5, NOAA Fisheries may identify reasonable and prudent alternatives for the action that avoid jeopardy, if any exist.

The step above requires a two-part analysis. The first part focuses on the action area and defines the proposed action's effects in terms of the species' biological requirements in that area (*i.e.*, effects on essential habitat features). The second part focuses on the species itself. It describes the action's effects on individual fish–or populations, or both–and places these effects in the context of the evolutionarily significant unit (ESU) as a whole. Ultimately, the analysis seeks to answer the question of whether the proposed action is likely to jeopardize a listed species' continued existence.

2.1.3 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to ESA-listed salmon and steelhead is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess to the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that is relevant to the determination.

The biological requirements are population characteristics necessary for the subject species to survive and recover to naturally-reproducing population levels, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the ESA-listed salmon and steelhead, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

For actions that affect freshwater habitat, NOAA Fisheries usually describes the habitat portion of a species' biological requirements in terms of a concept called properly functioning condition (PFC). PFC is defined as the sustained presence of natural, habitat-forming processes in a watershed that are necessary for the long-term survival of the species through the full range of environmental variation (NOAA Fisheries 1999). PFC, then, constitutes the habitat component of a species' biological requirements. Pacific salmon and steelhead survival in the wild depends upon the proper functioning of ecosystem processes, including habitat formation and maintenance. Restoring functional habitats depends largely on allowing natural processes to increase their ecological function, while at the same time removing adverse effects of current

practices. For this consultation, the biological requirements are habitat characteristics that would function to support successful adult migration, juvenile rearing and migration, and smoltification (see Table 1 for references).

2.1.4 Environmental Baseline

Over the past century, human activities have altered the range of physical forces in the lower Columbia River. To a significant degree, the risk of extinction for salmon stocks in the Columbia River basin has increased because complex freshwater and estuarine habitats needed to maintain diverse wild populations and life histories have been lost and fragmented. Estuarine habitat has been lost or altered directly through diking, filling, and dredging, and also has been degraded through changes to flow regulation that affect sediment transport and salinity ranges of specific habitats within the estuary. Not only have salmonid rearing habitats been eliminated, but the connections among habitats needed to support tidal and seasonal movements of juvenile salmon have been severed.

The lower Columbia River estuary lost approximately 43% of its tidal marsh [from 6,548 (h) historically to 3,723 (h) today], and 77% of its historic tidal swamp habitats [from 12,958 (h) historically to 2,813 (h) today] between 1870 and 1970 (Thomas 1983). One example is the diking and filling of floodplains that were formerly connected to the tidal river. This practice eliminated large expanses of low-energy, off-channel habitat for salmon rearing and migrating during high flows. Similarly, diking of estuarine marshes and forested wetlands within the estuary removed most of these important off-channel habitats.

Within the lower Columbia River, diking, river training devices (*e.g.*, pile dikes, riprap), railroads, and highways have narrowed and confined the river to its present location. Between the Willamette River and the mouth of the Columbia River, diking, flow regulation, and other human activities have resulted in a confinement of 33,994 (h) of floodplain that likely contained large amounts of tidal marsh and swamp. The lower Columbia River's remaining tidal marsh and swamp habitats are in a narrow band along the Columbia River and its tributaries' banks, and around undeveloped islands.

Table 1. Endangered and threatened Pacific salmon under NOAA Fisheries' jurisdiction in Columbia River basin.

Evolutionarily Significant Unit	Final Rule E = Endangered T = Threatened	Critical habitat (Final Rule)	Protective Regulations (Final Rule)
UCR spring chinook salmon	E: March 24, 1999; 64 FR 14308	N/A	ESA section 9 applies
SR sall-run chinook salmon	T: April 22, 1992; 57 FR 14653[1]	December 28, 1993; 58 FR 68543	April 22, 1992; 57 FR 14653
SR spring/summer-run chinook salmon	T: April 22, 1992; 57 FR 14653[1]	October 25, 1999; 64 FR 57399	April 22, 1992; 57 FR 14653
UWR chinook salmon	T: March 24, 1999; 64 FR 14308	N/A	July 10, 2000; 65 FR 42422
LCR chinook salmon	T: March 24, 1999; 64 FR 14308	N/A	July 10, 2000; 65 FR 42422
SR Basin steelhead	T: August 18, 1997; 62 FR 43937	N/A	July 10, 2000; 65 FR 42422
MCR steelhead	T: March 25, 1999; 64 FR 14517	N/A	July 10, 2000; 65 FR 42422
UWR steelhead	T: March 25, 1999; 64 FR 14517	N/A	July 10, 2000; 65 FR 42422
LCR steelhead	T: March 19, 1998; 63 FR 13347	N/A	July 10, 2000; 65 FR 42422
UCR steelhead	E: August 18, 1997; 62 FR 43937	N/A	ESA section 9 applies
CR chum salmon	T: March 25, 1999; 64 FR 14508	N/A	July 10, 2000; 65 FR 42422
SR sockeye salmon	E: November 20, 1991; 56 FR 58619	December 28, 1993; 58 FR 68543	ESA section 9 applies

Historically, the Brownsmead area, which is two miles upstream from Ferris Creek on the Columbia River, was a complex of salt marsh wetlands and low marsh/swamp/forested wetlands, with freshwater low marshlands in the area where streams entered the low marsh/swamp/forested wetlands (CREDDP 1984). The area was converted to agricultural use in the early to mid-1900s, and is approximately 2630 hectares in size. The adjacent uplands are managed primarily for

agricultural and forestry land uses. Conversion of the Brownsmead area resulted in a substantial loss of estuarine habitat that served an important freshwater/saltwater transition zone for salmonid fishes.

2.1.5 Analysis of Effects

2.1.5.1 Effects of Proposed Action

Construction Activities

In-water construction activities would occur within cofferdams. The effects of cofferdam installation and removal, fish removal and handling, and ground disturbance are discussed below.

Fish may be killed, or more likely temporarily displaced, by in-water work activities. Aspects of the proposed action most likely to injure or kill ESA-listed salmon and steelhead are the isolation of the in-water work area, and fish removal and handling. Although in-water work area isolation is a conservation measure intended to minimize adverse effects from in-stream construction activities to fish present in the work isolation area, some fish may be captured, handled, and released. Capturing and handling fish causes physiological stress, though overall effects of the procedure are generally short-lived if appropriate precautions are exercised. The primary factors controlling the likelihood of stress and death from handling are differences in water temperatures (between the river and transfer containers), dissolved oxygen concentrations, the amount of time that fish are held out of the water, and the extent of physical trauma. Stress on salmonids increases rapidly from handling if the water temperature exceeds 18°C or if dissolved oxygen concentration is below saturation.

The in-water work period recommended by the ODFW (July 1 to September 15) of a given year, and the proposed fish removal methods, are likely to minimize the adverse effects from work area isolation and fish handling as abundance of adult and juvenile salmon and steelhead is likely to be low at this time of year, except for adult and juvenile LCR chinook. Abundance of adult and juvenile LCR chinook is likely to be moderate to high at that time; therefore the proposed conservation measures are likely to be less effective in minimizing adverse effects to this species.

In-water construction activities (*i.e.*, cofferdam installation and removal and piling removal) are likely to temporarily increase concentrations of total suspended solids (TSS) and turbidity. Potential effects from project-related increases in turbidity on salmonid fishes include, but are not limited to: (1) Reduction in feeding rates and growth, (2) increased mortality, (3) physiological stress, (4) behavioral avoidance, (5) reduction in macroinvertebrate populations, and (6) temporary beneficial effects. Potential beneficial effects include a reduction in piscivorous fish/bird predation rates, enhanced cover conditions, and improved survival conditions.

Increases in TSS can adversely affect filter-feeding macroinvertebrates and fish feeding. At concentrations of 53 to 92 ppm (24 hours) macroinvertebrate populations were reduced

(Gammon 1970). Concentrations of 250 ppm (1 hour) caused a 95% reduction in feeding rates in juvenile coho salmon (Noggle 1978). Concentrations of 1200 ppm (96 hours) killed juvenile coho salmon (Noggle 1978). Concentrations of 53.5 ppm (12 hours) caused physiological stress and changes in behavior in coho salmon (Berg 1983).

The proposed in-water work is likely to increase turbidity upstream during incoming tides and downstream of the work area during outgoing tides. These increases in turbidity are likely to increase physiological stress, physical injury (*e.g.*, gill abrasion), and potentially displace rearing juvenile salmon and steelhead. Restricting in-water work to July 1 to September 15, and the use of cofferdams, is likely to minimize the above effects on rearing juvenile salmon and steelhead.

Ground Disturbance

Ground disturbance required to remove and install the bridge, would remove existing vegetation that provides effective ground cover and minimize erosion from rainfall, increasing suspended sediment. Effects of increased suspended sediment are likely to lead to effects similar to those described above in section 1.2. Although much of the vegetation will be removed from the project site, it is primarily non-native and the site restoration will establish native vegetation on the site.

Water Quality - Potential Spills, Equipment, and Removal of Treated Wood

Operation of excavation equipment requires the use of fuel, lubricants, coolants, *etc.*, which if spilled into a waterbody could injure or kill aquatic organisms. The proposed action includes a spill containment and control plan, which will help ensure protection of the waterbody and the existing riparian vegetation.

Juvenile salmon exposed to constant water temperatures greater than 18°C are highly susceptible to disease, such as *Chondrococcus columnaris.* Susceptibility to disease is a function of concentration of columnaris organisms, length of exposure, and temperature (EPA 2001) as well as age of individual (increased age, increased resistance). Contagion of *C. columanaris* has been suspected during passage of salmon through fish ladders (Pacha 1961), and increased incidence may be a result of the creation of slow-moving waters (Snieszko 1964). Increases in water temperature likely would reduce dissolved oxygen, compounding adverse effects on rearing juveniles. In addition to physiological and disease effects, exposure of juvenile salmonid fishes to increased water temperature and decreases in dissolved oxygen for an estimated period of 5 to 7 hours per high tide (*i.e.*, twice per 24-hour tidal cycle) may cause disorientation, possibly subjecting juvenile fish to increased predation.

Effects of diminished water quality are likely to primarily affect juvenile salmonid fishes, although effects to adult salmonids, such as depletion of energy reserves (Idler and Clemens 1959, Gilhousen 1980), pre-spawning mortality, and reduced viability of gametes (McCullough 1999) may occur if adults are isolated or blocked in poor water quality for extended periods of time.

Sediments in the action area are likely contaminated with elevated concentrations of copper and PAHs, and probably many other creosote components. Removal of treated wood pilings may adversely affect the subject species due to resuspension of contaminated sediments into the Columbia River.

Migration of creosote and its components (*e.g.*, copper and PAHs) from treated wood in lotic environments may adversely affect juvenile salmonid fishes (NMFS 1998). Copper is the main metal of concern because it is the most acutely toxic. Copper also leaches the most readily, followed by arsenic and chromium (Warner and Solomon 1990). Creosote contains over 300 compounds, including a variety of PAHs. Some PAHs are very toxic and bioconcentrate (NMFS 1998). Potential effects of elevated water column and sediments concentrations of copper and PAHs to the subject species include, but are not limited to: (1) Reduced growth and survival rates; (2) altered hematology; and (3) reproductive effects, including reduced frequency of spawning, reduced egg production, and increased deformities in fry (Sorensen 1991).

Part of the proposed action is to effect complete removal of the treated piles using a pea gravel cone to trap contaminants as they are brought to surface. They will then cap the remaining hole with suitable gravel. This will all be done within a coffer dam, isolating the work from the channel.

2.1.5.2 Effects on Critical Habitat

NOAA Fisheries designates critical habitat based on physical and biological features that are essential to the ESA-listed salmon and steelhead. Essential features of designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Effects to critical habitat from these categories would be similar to the effects described above in section 2.1.3.

2.1.5.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation."

NOAA Fisheries is not aware of any specific future non-federal activities within the action area that would cause greater effects to ESA-listed salmon and steelhead than presently occurs. The action area includes significant tracts of private and state lands. Land use on these non-federal lands include rural development, agricultural, and commercial forestry. Chemical fertilizers or pesticides are used on many of these lands, but no specific information is available regarding their use. Furthermore, NOAA Fisheries generally does not consider the rules governing timber harvests, agricultural practices, and rural development on non-federal lands within Oregon to be sufficiently protective of watershed, riparian, and stream habitat functions to support the survival and recovery of ESA-listed salmon and steelhead. Therefore, these habitat functions likely are at risk due to future activities on non-federal forest lands within the basin.

Non-federal activities within the action area are expected to increase due to a projected 17.4% increase in human population by the year 2024 in Clatsop County (EPA 2000). Thus, NOAA Fisheries assumes that future private and state actions will continue within the action area, increasing as population density rises. Each subsequent action may have only a small incremental effect, but taken together they may have a significant effect that would further degrade the watershed's environmental baseline and undermine the improvements in habitat conditions necessary for ESA-listed salmon and steelhead to survive and recover.

2.1.6 Conclusion

The next step in NOAA Fisheries' approach to determine jeopardy is to determine whether the proposed action, in light of the above factors, is likely to appreciably reduce the likelihood of the species' survival and recovery in the wild. For the jeopardy determination, NOAA Fisheries uses the consultation regulations, and its Habitat Approach (NOAA Fisheries 1999) to determine whether actions would further degrade the environmental baseline or hinder attainment of PFC at a spatial scale relevant to the listed ESU. That is, because the subject ESUs consists of groups of populations that inhabit geographic areas ranging in size from less than ten to several thousand square miles, the analysis must be applied at a spatial resolution wherein the actual effects of the action upon the species can be determined.

After reviewing the best available scientific and commercial information available regarding the current status of SR steelhead, UCR steelhead, MCR steelhead, UWR steelhead, LCR steelhead, SR spring/summer-run chinook salmon, SR fall-run chinook salmon, UCR spring-run chinook salmon, UWR chinook salmon, LCR chinook salmon, CR chum salmon, and SR sockeye salmon, the environmental baseline for the action area, the effects of the proposed action, and cumulative effects, NOAA Fisheries concludes that the action, as proposed, is not likely to jeopardize the continued existence of the species listed above in this paragraph, and is not likely to destroy or adversely modify designated critical habitat for SR fall-run chinook salmon, SR spring/summer-run chinook salmon, and SR sockeye salmon.

Our conclusion is based on the following considerations: (1) In-water construction and its potential effects will occur at a time of year when abundance of adult and juvenile salmon and steelhead is likely to be low; (2) work area isolation and fish removal will occur; and (3) the effects of this action are not likely to impair currently properly functioning habitats, appreciably reduce the functioning of already impaired habitats, or retard the long-term progress of impaired habitats toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

2.1.7 Reinitiation of Consultation

This concludes formal consultation on these actions in accordance with 50 CFR 402.14(b)(1). Reinitiation of consultation is required: (1) If the amount or extent of incidental take is exceeded; (2) the action is modified in a way that causes an effect on the ESA-listed salmon and steelhead that was not previously considered in the biological assessment and this Opinion; (3)

new information or project monitoring reveals effects of the action that may affect the ESA-listed salmon and steelhead in a way not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonid fishes by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

2.2.1 Amount or Extent of Take

The proposed action covered by this Opinion is reasonably certain to result in incidental take of ESA-listed salmon and steelhead due to effects from construction activities, ground disturbance, and potential spills. Effects of actions such as these are largely unquantifiable in the short term, but are likely to be largely limited to harm in the form of injury and behavior modification. Therefore, even though NOAA Fisheries expects some low level of incidental take to occur due to the action covered by this Opinion, the best scientific and commercial data available are not sufficient to enable it to estimate a specific amount of incidental take. In instances such as this, NOAA Fisheries designates the expected level of take in terms of the extent of take allowed. Therefore, the extent of take for this Opinion is limited to take resulting from activities undertaken as described in this Opinion that occurs in the action area, which includes riverine and estuarine habitats accessible to SR steelhead, UCR steelhead, MCR steelhead, UWR steelhead, LCR steelhead, SR spring/summer-run chinook salmon, SR fall-run chinook salmon, UCR spring-run chinook salmon, UWR chinook salmon, LCR chinook salmon, CR chum salmon, and SR sockeye salmon in Ferris Creek in the portion of Ferris Creek that extends from the upper extent of turbidity at high tide, downstream to the lowest extent of turbidity, 1/4 mile below the project footprint. Incidental take occurring due to modifications to the proposed action or beyond the area described is this Opinion are not authorized by this consultation.

In addition, NOAA Fisheries expects that the possibility exists for handling SR steelhead, UCR steelhead, MCR steelhead, UWR steelhead, LCR steelhead, SR spring/summer-run chinook

salmon, SR fall-run chinook salmon, UCR spring-run chinook salmon, UWR chinook salmon, LCR chinook salmon, CR chum salmon, and SR sockeye salmon during the work isolation process, which will result in incidental take to individuals during the construction period. NOAA Fisheries anticipates that incidental take of up to 24 juvenile SR steelhead, UCR steelhead, MCR steelhead, UWR steelhead, LCR steelhead, SR spring/summer-run chinook salmon, SR fall-run chinook salmon, UCR spring-run chinook salmon, UWR chinook salmon, LCR chinook salmon, CR chum salmon, or SR sockeye salmon, including the injury of 22 and death of 2 individuals, could occur as a result of the fish salvage process. This take estimate is based on approximately 24 square meters of stream habitat that will be dewatered during work area isolation. The extent of the take is limited to SR steelhead, UCR steelhead, MCR steelhead, UWR steelhead, LCR steelhead, SR spring/summer-run chinook salmon, SR fall-run chinook salmon, UCR spring-run chinook salmon, UWR chinook salmon, LCR chinook salmon, CR chum salmon, and SR sockeye salmon within the action area.

2.2.2 Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize take of the above species from implementation of the proposed action. The FHWA shall ensure:

1. Minimization of incidental take from general construction by applying conditions to the proposed action that avoid or minimize adverse effects to riparian and aquatic systems.

2. Completion of a comprehensive monitoring and reporting program to confirm this Opinion is meeting its objective of minimizing take from the proposed action.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (general conditions for construction, operation and maintenance), the FHWA shall ensure that:

    a. Timing of in-water work. Work within the active channel of Ferris Creek will be completed during the period of July 1 to September 15. All work must be completed within these dates unless otherwise approved in writing by NOAA Fisheries.
    b. Minimum Area. Confine construction impacts to the minimum area necessary to complete the project.
    c. Cessation of work. Project operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.

d. Fish screens. All water intakes used for a project, including pumps used to isolate an in-water work area, will have a fish screen installed, operated and maintained according to NOAA Fisheries' fish screen criteria.[2]

e. Fish passage. Passage will be provided for any adult or juvenile salmonid species present in the project area during construction, and after construction for the life of the project. Upstream passage is not required during construction if it did not previously exist.

f. Pollution and Erosion Control Plan. A pollution and erosion control plan will be prepared and carried out to prevent pollution related to construction operations. The plan must be available for inspection on request by FHWA or NOAA Fisheries.

   i. Plan Contents. The pollution and erosion control plan must contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

      (1) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.

      (2) Practices to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.

      (3) A description of any hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.

      (4) A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

      (5) Practices to prevent construction debris from dropping into any stream or waterbody, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

   ii. Inspection of erosion controls. During construction, all erosion controls must be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately.[3]

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[2] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

[3] "Working adequately" means no turbidity plumes are evident during any part of the year.

(1) If inspection shows that the erosion controls are ineffective, work crews must be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.

(2) Sediment must be removed from erosion controls once it has reached 1/3 of the exposed height of the control.

g. Construction discharge water. All discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows:

i. Water quality. Facilities must be designed, built and maintained to collect and treat all construction discharge water using the best available technology applicable to site conditions. The treatment must remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities must not exceed 4 feet per second.

iii. Spawning areas, marine submerged vegetation. No construction discharge water may be released within 300 feet upstream of active spawning areas or areas with marine submerged vegetation.

h. Preconstruction activity. Before significant[4] alteration of the project area, the following actions must be completed:

i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite:

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales[5]).

(2) An oil-absorbing, floating boom whenever surface water is present.

iii. Temporary erosion controls. All temporary erosion controls must be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

i. Heavy Equipment. Use of heavy equipment will be restricted as follows:

i. Choice of equipment. When heavy equipment must be used, the equipment selected must have the least adverse effects on the environment (*e.g.*, minimally-sized, rubber-tired).

ii. Vehicle staging. Vehicles must be fueled, operated, maintained, and stored as follows:

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[4] "Significant" means an effect can be meaningfully measured, detected or evaluated.

[5] When available, certified weed-free straw or hay bales must be used to prevent introduction of noxious weeds.

(1) Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area placed 150 feet or more from any stream, waterbody or wetland.

(2) All vehicles operated within 150 feet of any stream, waterbody or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired in the vehicle staging area before the vehicle resumes operation. Inspections must be documented in a record that is available for review on request by FHWA or NOAA Fisheries.

(3) All equipment operated instream must be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt, and mud.

(4) The temporary work bridges shall be constructed to ensure full containment of any spills and/or leaks.

iii. Stationary power equipment. Stationary power equipment (*e.g.*, generators, cranes) operated within 150 feet of any stream, waterbody or wetland must be diapered to prevent leaks, unless otherwise approved in writing by NOAA Fisheries.

j. Site preparation. Native materials will be conserved for site restoration.

i. If possible, native materials must be left where they are found.

ii. Materials that are moved, damaged or destroyed must be replaced with a functional equivalent during site restoration.

iii. Any large wood,[6] native vegetation, weed-free topsoil, and native channel material displaced by construction must be stockpiled for use during site restoration.

k. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, the work area will be well isolated from the active flowing stream using inflatable bags, sandbags, sheet pilings, or similar materials. The work area will also be isolated if in-water work may occur within 300 feet upstream of spawning habitats.

l. Capture and release. Before and intermittently during pumping to isolate an in-water work area, an attempt must be made to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.

i. A fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed salmon and steelhead must conduct or supervise the entire capture and release operation.

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[6] For purposes of this Opinion only, "large wood" means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

ii. If electrofishing equipment is used to capture fish, the capture team must comply with NOAA Fisheries' electrofishing guidelines.[7]

iii. The capture team must handle ESA-listed salmon and steelhead with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.

iv. Captured fish must be released as near as possible to capture sites.

v. ESA-listed salmon and steelhead may not be transferred to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.

vi. Other Federal, state, and local permits necessary to conduct the capture and release activity must be obtained.

vii. NOAA Fisheries or its designated representative must be allowed to accompany the capture team during the capture and release activity, and must be allowed to inspect the team's capture and release records and facilities.

m. Earthwork. Earthwork (including, excavation, filling and compacting) will be completed as quickly as possible.

i. Site stabilization. All disturbed areas must be stabilized, including obliteration of temporary roads, within 12 hours of any break in work unless construction will resume work within seven days between June 1 and September 30, or within two days between October 1 and May 31.

ii. Source of materials. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained outside the riparian area.

n. Site restoration. All streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows:

i. Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (such as large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

ii. Streambank shaping. Damaged streambanks must be restored to a natural slope, pattern and profile suitable for establishment of permanent native woody vegetation.

iii. Revegetation. Areas requiring revegetation must be replanted before the first April 15 following construction with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.

iv. Pesticides. No pesticide application is allowed, although mechanical or other methods may be used to control weeds and unwanted vegetation.

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[7] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

v. Fertilizer. No surface application of fertilizer may occur within 50-feet of any stream channel.

vi. Fencing. Fencing must be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

o. Treated wood.

i. When removing treated wood use the following precautions.

(1) Treated wood debris. Take care to ensure that no treated wood debris falls into the water. If treated wood debris does fall into the water, remove it immediately.

(2) Disposal of treated wood debris. Dispose of all treated wood debris removed during a project, including treated wood pilings, at an upland facility approved for hazardous materials of this classification. Do not leave a treated wood piling in the water or stacked on the streambank.

(3) Pile Removal. If a temporary or permanent piling will be removed, the following conditions apply:

(a) Dislodge the piling with a vibratory hammer.

(b) Once loose, place the piling onto the construction barge or other appropriate dry storage site.

(c) If a treated wood piling breaks during removal, either remove the stump by breaking or cutting 3 feet below the sediment surface or push the stump in to that depth, then cover it with a cap of clean substrate appropriate for the site, filling the holes left by each piling with clean, native sediments, whenever feasible.

2. To implement reasonable and prudent measure #2 (monitoring), the FHWA shall:

a. Implementation monitoring. Ensure that the permittee submits a monitoring report to the FHWA within 120 days of project completion describing the permittee's success meeting permit conditions. The monitoring report will include the following information:

i. Project identification

(1) Permittee name, permit number, and project name.

(2) Project location, including any compensatory mitigation site(s), by 6th field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map.

(3) FHWA contact person.

(4) Starting and ending dates for work completed.

(a) Photo documentation. Photo of habitat conditions at the project and any compensation site(s), before, during, and after project completion.[8]
(b) Include general views and close-ups showing details of the project and project area, including pre and post construction.
(c) Label each photo with date, time, project name, photographer's name, and a comment about the subject.

ii. Other data. Additional project-specific data, as appropriate for individual projects.

(1) Work cessation. Dates work cessation was required due to high flows.
(2) Fish screen. Compliance with NOAA Fisheries' fish screen criteria.
(3) A summary of pollution and erosion control inspections, including any erosion control failure, hazardous material spill, and correction effort.
(4) Site preparation.
(a) Total cleared area – riparian and upland.
(b) Total new impervious area.
(5) Isolation of in-water work area, capture and release.
(a) Supervisory fish biologist – name and address.
(b) Methods of work area isolation and take minimization.
(c) Stream conditions before, during and within one week after completion of work area isolation.
(d) Means of fish capture.
(e) Number of fish captured by species.
(f) Location and condition of all fish released.
(g) Any incidence of observed injury or mortality.
(6) Site restoration.
(a) Finished grade slopes and elevations.
(b) Log and rock structure elevations, orientation, and anchoring (if any).
(c) Planting composition and density.
(d) A five-year plan to:
(i) Inspect and, if necessary, replace failed plantings to achieve 100% survival at the end of the first year, and 80% survival or 80% coverage after five years (including both plantings and natural recruitment).
(ii) Control invasive non-native vegetation.

[8] Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

(iii) Protect plantings from wildlife damage and other harm.

b. Reporting. On an annual basis for five years after completing the project, the FHWA shall ensure submital of a monitoring report to NOAA Fisheries describing the applicant's success in meeting their habitat restoration goals of any riparian plantings. This report will consist of the following information:

i Project identification.
(1) Project name.
(2) Starting and ending dates of work completed for this project.
(3) The FHWA contact person.

ii Riparian restoration. Documentation of the following conditions:
(1) Any changes in planting composition and density.
(2) A plan to inspect and, if necessary, replace failed plantings and structures.

iii Monitoring reports will be submitted to:

NOAA Fisheries
Oregon State Habitat Office
Attn: 2004/00021
525 NE Oregon Street, Suite 500
Portland, OR 97232-2778

c. NOTICE. If a sick, injured or dead specimen of a threatened or endangered species is found, the finder must notify the Vancouver Field Office of NOAA Fisheries Law Enforcement at 360.418.4246. The finder must take care in handling of sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

Pursuant to the MSA:

- NOAA Fisheries must provide conservation recommendations for any Federal or state action that would adversely affect EFH (§305(b)(4)(A)).

- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include

a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (§305(b)(4)(B)).

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting this definition of EFH: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10). "Adverse effect" means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810). EFH consultation with NOAA Fisheries is required regarding any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects on EFH.

3.2 Identification of EFH

Pursuant to the MSA, the Pacific Fisheries Management Council (PFMC) has designated EFH for three species of federally-managed Pacific salmon: Chinook (*O. tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). EEH also has been designated for groundfish species and coastal pelagic species. The estuarine EFH composite includes those waters, substrates and associated biological communities within bays and estuaries of the EEZ, from mean higher high water level (MHHW) or extent of upriver saltwater intrusion to the respective outer boundaries for each bay or estuary as defined in 33 CFR 80.1 (Coast Guard lines of demarcation). Detailed descriptions and identifications of EFH are contained in the fishery management plans for groundfish (PFMC 1999), coastal pelagic species (PFMC 1999a), and Pacific salmon (PFMC 1999b). Casillas *et al.* (1998) provides additional detail on the groundfish EFH habitat complexes.

3.3 Proposed Action

The proposed action is detailed above in section 1.2 of this document. For this consultation, NOAA Fisheries defines the action area as all marine and riverine habitats accessible to the subject species in Ferris Creek, a tributary to the Columbia River (river mile 28.2 to river mile 30.7). This area has been designated as EFH for various life stages of coastal pelagic species, groundfish species, and chinook and coho salmon (Table 2).

3.4 Effects of Proposed Action

The proposed action will adversely affect water quality for coastal pelagic species, groundfish species, and chinook and coho salmon due to increased concentrations of suspended sediment and turbidity and potential spills of toxic materials.

3.5 Conclusion

NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for coastal pelagic species, groundfish species, and chinook and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the FHWA, and believes that these measures are sufficient to minimize, to the maximum extent practicable, the following EFH effects; increased concentrations of suspended sediments and increased potential for contaminants. Although, these conservation measures are not sufficient to fully address the remaining adverse effects to EFH, specific terms and conditions outlined in section 2.2.3 are generally applicable to designated EFH for chinook and coho salmon, and do address these adverse effects. Consequently, NOAA Fisheries recommends that the following term and condition be implemented as EFH conservation recommendations:

1. Term and Condition 1.f. will minimize the potential for chemical contamination and increased concentrations of suspended sediments.

3.7 Statutory Response Requirement

Pursuant to the MSA (section 305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations,

including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The FHWA must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(l)).

Table 2. Species with designated EFH in the estuarine EFH composite in the state of Oregon.

Groundfish Species	
Leopard Shark (southern OR only)	*Triakis semifasciata*
Soupfin Shark	*Galeorhinus zyopterus*
Spiny Dogfish	*Squalus acanthias*
California Skate	*Raja inornata*
Spotted Ratfish	*Hydrolagus colliei*
Lingcod	*Ophiodon elongatus*
Cabezon	*Scorpaenichthys marmoratus*
Kelp Greenling	*Hexagrammos decagrammus*
Pacific Cod	*Gadus macrocephalus*
Pacific Whiting (Hake)	*Merluccius productus*
Black Rockfish	*Sebastes maliger*
Bocaccio	*Sebastes paucispinis*
Brown Rockfish	*Sebastes auriculatus*
Copper Rockfish	*Sebastes caurinus*
Quillback Rockfish	*Sebastes maliger*
English Sole	*Pleuronectes vetulus*
Pacific Sanddab	*Citharichthys sordidus*
Rex Sole	*Glyptocephalus zachirus*
Rock Sole	*Lepidopsetta bilineata*
Starry Flounder	*Platichthys stellatus*
Coastal Pelagic Species	
Pacific Sardine	*Sardinops sagax*
Pacific (Chub) Mackerel	*Scomber japonicus*
Northern Anchovy	*Engraulis mordax*
Jack Mackerel	*Trachurus symmetricus*
California Market Squid	*Loligo opalescens*
Pacific Salmon Species	
Chinook Salmon	*Oncorhyncus tshawytcha*
Coho Salmon	*Oncorhyncus kisutch*

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Section 7(a)(2) of the ESA requires biological opinions to be based on the best scientific and commercial data available. This section identifies the data used in developing this Opinion.

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